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1947 in Retrospect

The foundry industry will look back on 1947 with mixed feelings. The output of iron castings was excellent; of steel castings better than we expected; of non-ferrous, patchy. There was much frustration, especially in February, when power cuts shut down large sections of the industry for a fortnight. We shared this to the full and failed to publish two issues for the first time in our long history. Though the Garrett report was not then issued, many of its recommendations were implemented during this fortnight and a number of foundry concerns were given a thorough spring-clean. Throughout the year there have been many temporary shortages—coke, pig-iron, coal dust, loose tools—but, by borrowing from next door and other means, production has gone steadily forward. The production per man-hour is not yet equal to pre-war, despite increased mechanisation. Obviously there were many adverse factors operating such as lack of raw materials, inexperienced personnel, inadequate food, and a shorter working week. This last factor has had a banal influence on transport, which until recent weeks, when a special effort has been made, was beginning to suffocate industry.

The next major factor was the publication of the Garrett Report. This has been well received, but recent legislation makes progress difficult. For the larger concerns, the construction of new bath and changing rooms demands capital expenditure, the permission for which is not readily given. However, there are many provisions with which all foundries can comply. These include a wide range of ameliorations entered under the general classification of good housekeeping. There must of necessity be a wide interpretation of the recommendations owing to the diverse nature of the concerns comprising the foundry industry.

Later in the year there was the Annual Conference of the Institute of British Foundrymen in Nottingham. This served to show up the inadequacy of the hotel accommodation in the large provincial centres, and as a result the future conference policy of the Institute is under examination. In plain English, several of the technical institutes have outgrown potential hotel accommodation for the majority of the industrial centres. A solution is not easy to envisage.

In September there was the foundry exhibition at Olympia. Whether or not it was a success it is difficult to say. The organisation was excellent, the attendance was satisfactory, but there was little for sale. The machinery shown adequately demonstrated recent progress and trends. Yet we like trade exhibitions to be trade shows and not museums stressing futuristic tendencies.

Of novelties disclosed during the year the two outstanding ones both have reference to the bonding of moulding sands. The American one uses a petrol derivative and the German a plastic. Neither has, to the best of our knowledge, so far reached this country. The manufacture of castings by the modern adaptation of the last wax process has lost tonnage owing to the curtailment of munitions.

There has been a shrinkage in the production of magnesium castings, and now that the aluminium foundry industry has used up most of the wartime stock of scrap, the competitive position is beginning to be impaired. Iron castings, too, are no longer cheap, as the price of pig-iron, coke and raw materials generally have reached record maxima. Moreover, the quality of some, especially coke, has deteriorated. The National Coal Board have promised some improvement in the future,

(*Concluded on page* 2.)

Contents

1947 in Retrospect, 1.—Recognition of Long Service, 2.—Forthcoming Events, 2.—Correspondence, 2.—Foundry Conditions, Personnel and Production, 3.—Cast Crankshafts, 9.—A Strickled Core for a Lead Pot, 11.—A Note on Pattern Construction, 12.—An Epitaph, 12.—Patternmaking and Foundry Practice, 13.—Notes from the Branches, 15.—Publications Received, 15.—Book Reviews, 15.—House Organ, 15.—Personal, 16.—Harland & Wolff's Output Record, 16.—Increases in Capital, 17.—Gazette, 17.—New Consumption Trends in Nickel, 17.—Industrial Productivity Committee, 18.

1947 in Retrospect

(*Continued from page* 1.)

but in the meantime coke is causing troubles in both the technical and economic spheres.

Throughout the year much has been heard about labour shortage. A few Italian moulders have been imported and, in general, have given satisfaction. Yet this labour shortage needs qualification. There has been a substantial influx of general labour, sufficient to allay immediate worries, but the real shortage is of highly skilled moulders and pattern-makers. There should be a recognition that there is no reservoir; thus these craftsmen will have to be created by training schemes. Again, there is a shortage of boys, but this is not universal. Of two neighbouring foundries, one will get all the boys it requires and the other be completely devoid of applicants. We have during the year spent many hours on committees covering foundry apprenticeship and the like, and the outstanding lesson we have learned, and which we feel we must stress, is: the foundry owners throughout the land must be early in the queue for obtaining youth by co-operating with the local education authorities for the creation and staffing of part-time day classes for training foundry boys. If they do not follow our advice they will find that other industries have got there first and their prospects of obtaining and retaining juvenile labour will indeed be grim. The C.F.A. have given a fine lead and it is up to the districts to put their schemes into operation without delay.

As capital expenditure on new buildings and plant is to be curtailed from now on, foundry executives can concentrate on getting out the maximum production with existing plant, and to do this they will have to pay special attention to maintenance—never a strong point in the foundryman's armoury. Finally, we wish all our readers good health and prosperity in the exciting times ahead.

Recognition of Long Service

Ten employees of Meynell & Sons, Limited, Montrose Street, Wolverhampton, who have completed between them 484 years of service as brass foundry engineers, were recently presented with inscribed gold watches by Mr. W. Charles Meynell, chairman of the directors. Two of them, Mr. T. E. Fox with 53 years' service and R. Preece with 51 years', have worked together for the firm for 40 years. Their fathers and grandfathers also worked together for the firm, thus making a family record of over 100 years.

Forthcoming Events

(Secretaries are invited to send in notices of meetings, etc., for inclusion in this column.)

JANUARY 3.
Institution of Production Engineers.
Wolverhampton Section :—Visit to Stewart & Lloyds, Bilston. Start from General Office at 9.30 a.m.

JANUARY 5.
Cleveland Institution of Engineers
" Desiliconisation," by E. F. Brown, at the Cleveland Scientific and Technical Institute, Middlesbrough, at 6.30 p.m.

JANUARY 7.
Institute of British Foundrymen.
Lancashire Branch :—" Centrifugally and Precision Cast Ferrous Alloys for Aircraft Applications," by J. F. B. Jackson, at 7 p.m., at the Engineers' Club, Manchester.
Institution of Production Engineers.
Preston Section :—" Induction Heating," lecturer from Philips Lamps, Limited, at the Harris Institution, Corporation Street, Preston, at 7.15 p.m.

JANUARY 8.
The Institute of Metals.
London Local Section :—" Silver," by Dr. W. B. Hunt, M.Sc., A.R.C.S., A.R.I.C., at 7 p.m., at No. 4, Grosvenor Gardens, London, S.W.1.

JANUARY 9.
Manchester Association of Engineers.
" Researches Now in Progress in the Cavendish Laboratory," by Prof. Sir Lawrence Bragg, O.B.E., M.C., D.Sc., F.R.S., in the Great Hall, College of Technology, Sackville Street, Manchester, at 7.30 p.m.

JANUARY 10.
Institute of British Foundrymen.
Newcastle Branch :—Past-President's Night. At the Neville Hall, Newcastle-upon-Tyne, at 6 p.m.
Scottish Branch :—" Mechanised Bath Production," by R. S. M. Jeffrey, B.Sc., F.R.I.C., at the Royal Technical College, Glasgow, at 3 p.m.

Correspondence

[We accept no responsibility for the statements made or the opinions expressed by our correspondents.]

RAISING THE CARBON

To the Editor of the FOUNDRY TRADE JOURNAL

SIR,—I have read of Major Mohamed El Sabba Said's difficulty in raising the carbon content of steel scrap in an oil-fired rotary furnace (letter to you, published on December 11).

My experience in operating a pulverised coal fired Bracklesberg rotary furnace has shown that total carbon content can be raised very accurately in a general charge (steel scrap, cast-iron borings, ingot mould scrap) by using petroleum coke as the carburising agent.

It is essential that the petroleum coke be added to the furnace when the charge is in the " pasty " or sticky condition just prior to becoming molten. If the coke is added with the cold charge, it is burnt out and lost before the charge can absorb it. If added after the charge is molten, it floats on top of the charge and again is lost by burning out.

Experience has shown that accurate compositions were obtained by allowing a 30 per cent. efficiency of the petroleum coke.—Yours, etc.,

W. W. HARRISON.

12, Marina Drive,
Dunstable Road, Beds.
December 18, 1947.

Foundry Conditions, Personnel and Production

By R. F. Coates

(*Continued from page* 355.)

Good Housekeeping

In some jobbing foundries, however, the sand pathways remain. The principal difficulty is to keep them flat and level. The laying of steel rails upon concrete stools let into the foundry floor is suggested as a method of obtaining a clearly defined and flat pathway.

The effect of wall surfaces plays an important part in creating good or bad appearances. Walls having a smooth surface are easier to clean, and will remain so for a longer period than those with ridges formed by brickwork. As part of a scheme for improving the general appearance in the Author's foundry, the walls were plastered. The qualities most apparent when the job was completed were the extremely smooth surface and the light grey colour obtained. Figs. 5 and 6 show sections of the walls before and after plastering. The contrast between the brick and plastered sections is notable, especially in view of the fact that the photographs were taken in February. The glazing of a section of the roof effected a further improvement in light reflection, as illustrated in Fig. 7. This work has effected a transformation in the general appearance of the foundry and has considerably improved visibility. It illustrates, furthermore, the value of utilising natural light to the best advantage.

Haynes, in a Paper,[4] gives examples of the many uses to which gas may be applied in the foundry. Among those conducive to improving conditions are ladle drying and drying moulds *in situ*, thereby eliminating smoke and minimising dust. Where a good housekeeping programme is envisaged, it is possible that an examination of the shop layout may reveal that a rearrangement of equipment may assist production flow. In any such project, however, it is important that consideration of the human factor be included.

The possibility of improving production flow can be thoroughly investigated by mounting a large plan of the foundry floor on a plywood board. Scale blocks of all equipment can then be placed in various positions until the best layout is obtained. The Author would mention here that there is room for improvement in the standard of finish of some items of foundry equipment.

Good housekeeping is principally a matter of coordinating labour, and a good standard can be reached without a large capital expenditure. It is therefore a matter in which every foundry can do something to produce some semblance of order. Morale, discipline, safety and health are related to good housekeeping. A shop with an orderly floor, clearly defined and level pathways, shelves and bins for storing portable equipment will impress itself not only upon the workers, but upon visitors also.

Colour in industry is comparatively new in this country, and there is now a general awakening to its value. A few progressive companies have carried out fairly extensive schemes, while others are making experiments in their shops. The purpose of colour in industry is not to impress the visitor, but to provide an agreeable environment for those employed in it day by day and month by month. The choice of colours is influenced by that of the materials used, besides the standard of artificial and natural lighting and temperature normally maintained. The usual practice in many foundries of having white walls is to be discouraged on the ground that white forms too sharp a contrast with the dark colour of the materials used.

FIG. 5.—SECTION OF FOUNDRY WALL BEFORE PLASTERING.

Foundry Conditions

The principal effects of a balanced colour scheme for foundries are: improved visibility resulting in better workmanship, a vastly improved general appearance, and that good housekeeping is facilitated. To any company envisaging a colour scheme, the advice of the British Colour Council is recommended.

Details of a scheme applied in a well-known foundry were given in an article[5] published recently. Broadly, this scheme depends on light stone colour arrested by contrast with implement blue, with appropriate colours for plant and equipment. This scheme was prepared by the company's consultant industrial psychologists. The quality most apparent, it is stated, is that of vastly improved visual conditions, and the attendant benefits arising from a new conception of orderliness and tidiness. The Council of Ironfoundry Associations have also stressed the importance of colour in foundries, their recommendations being endorsed in an editorial[6] which included further suggestions covering the application of colour to foundry interiors and equipment.

FIG. 6.—SECTION OF FOUNDRY WALL AFTER PLASTERING.

At the Author's foundry, six panels of the walls have been painted as an experiment. Four are painted in varying shades of cream, with 5-ft. dados in shades of light and dark stone and grey, two being painted " off white," with a dark stone dado, with an orange strip at the top of the dado. A final choice of these schemes is being made in the course of a few months, and of them there is general agreement that the latter scheme is the most attractive. In the Author's view the cream colour is to be preferred, since it may prove to have better " wearing " qualities under foundry conditions, and it is not so sharp in contrast with the dark colour of the floor and materials. Observations in the other departments of the works, which are all painted in cream and green, leads the Author to endorse all the claims made with regard to the value of colour in industry.

Dust Control

The most practical method of dust control in foundries is the installation of extracting plant at strategic points of origin. Measures should be taken whenever possible to prevent dust from rising, and while the use of water for this purpose cannot be widely employed, it can be used with most effect at certain points of origin. Another measure to keep dust from rising is to discourage the indiscriminate use of the air blast.

Dust on walls, trusses, girders, etc., should be removed periodically with the vacuum cleaner; a mobile type is shown in Fig. 3.

A better method would be to install a heavy duty vacuum plant at a suitable location, with pipes around the foundry with suitable coupling connections. This would avoid the necessity of moving the plant around, which in some foundries may prove difficult owing to lack of space, and the plant could be used frequently in all parts of the foundry.

The fettling shop presents the major problem in most jobbing foundries in effecting dust control. The work of de-coring large castings is laborious and exposes the operator, and those in the vicinity, to dust. Furthermore, poor housekeeping conditions usually exist in this area, and the combination of these factors frequently contributes to a high rate of labour turnover. One method of improving these conditions is by a grid floor over a pit, the débris falling through the grid into bins, which can be periodically removed by the crane for disposal into trucks. A down draft would further assist in minimising dust.

An interesting experiment in dust control was recently undertaken in the fettling shop at the Author's foundry. A thick cloud of dust was created by applying the air blast to the shop floor. From a height of about 15 ft. a spray was applied through a gun connected with a paint spray apparatus. Within one minute of its being applied the atmosphere was completely cleared of dust. In view of this success it is proposed to fix a number of these guns at strategic points for periodical use. There are also possibilities of applying this method of dust control over the knockout grid in the foundry.

Another method of applying water in the fettling shop is that of using a water curtain in conjunction with the swing grinder, the casting being placed so that the

dust and sparks created during the operation are directed on to the curtain of water, eliminating, to a large degree, the dust hazard. The Author has never favoured the shot-blast chamber, which involves the operator working inside, and consequently, where the type of product permits, the automatic cleaning type is recommended.

The outstanding advance in minimising dust in the process of cleaning castings has been made evident by the introduction of the Hydro-blast method, a view of which is shown in Fig. 8. The economic operation of this plant is influenced by the tonnage and type of castings produced, and it is unfortunate that at present this is confined to the larger foundries. The foundry industry is indebted to those foundry managements who have installed this plant, and it is to be hoped that as a result of their experiences a much wider application may be possible in the future.

In view of the initial cost, and factors involved in its economic operation, the Author considers that there are possibilities in two or more neighbouring foundries sharing a Hydro-blast. There are obvious difficulties, but in doing so those foundries taking such joint action will be enabled to establish a standard of conditions equal to those shown on Fig. 9, in addition to saving labour. Foundry concerns take joint action in many matters of administration, and there appears to be little reason why they should not do so, in those of a practical nature, offering such advantages as the Hydro-blast method of cleaning castings.

Ventilation and Heating

Research in factories has shown that unsatisfactory atmospheric conditions besides causing discomfort, lead to reduced production. Ventilation is essentially air movement, the introducing of fresh air to replace that which may become stagnant. The two methods by which ventilation may be effected are natural and mechanical. Warm air, being lighter than cool air, rises, and is replaced by the heavier cool air. Thus, if in a foundry openings are at a low level, with others higher, air currents will be set up, so that warm air passes out through the higher openings. Much can therefore be done to ensure adequate natural ventilation. by the use of the hopper type of windows at low levels, with swivel and sliding windows above, together with efficient roof cowling. Fig. 7 also shows one of a number of sliding windows which have improved ventilation, as well as letting in natural light.

The nature of the work in foundries renders temperature control a difficult problem. During the early period on very cold days, the temperature inside the foundry is akin to that outside, if no form of heating be provided. The finishing operations of the foundry craftsman call for some dexterity, and uncomfortably low temperatures tend to reduce efficiency due to the hands becoming chilled. In view of the fact that some form of heating is at certain periods necessary in foundries, and that adequate ventilation is important, a combined heating and ventilating unit has much to commend it for use in foundries.

Such a unit is described and illustrated in a pamphlet.[7] This steam heated unit can be used to supplement natural ventilation. Each comprises a fan and a heater. The fan passes air over the heating surface, and then propels it forward into the shop. These units are employed to warm and re-circulate air already in the building. By connecting a short sheet metal duct to the intake side, the heater can be made to take its air supply from outside, it then becoming a true ventilating mechanism.

The value of these units is, therefore, that they can be used either as heater-ventilators or as ventilators only, when no heating is required, and are therefore ideally suited to the variant temperatures usually existing in jobbing foundries.

Lighting

Conditions already discussed have an indirect relevance to work through their effect on the mental and physical efficiency of the worker. Bad lighting has a more immediate influence—it lowers output directly. During the daytime there is usually an abundance of natural light outside, and if a sufficient proportion is allowed to enter the foundry, there is little cause for complaint.

The illustrations shown indicate the great improvement which can be effected through the letting in of

FIG. 7.—IMPROVED LIGHTING BY ROOF GLAZING.

Foundry Conditions

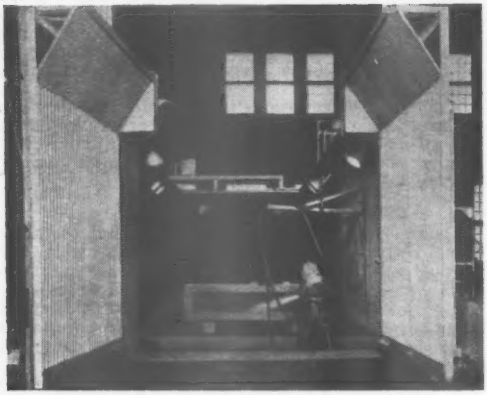

FIG. 8.—VIEW OF HYDRO-BLAST ROOM.

windows and glazing a section of the roof. This, in conjunction with a wall surface which reflects a good proportion to maintain this standard of light, utilises natural light to the best advantage. It is essential, however, that both walls and windows be cleaned at standardised times.

Modern artificial lighting can be excellent and, with the expert advice available, there is no reason for failure to provide a good standard of lighting in foundries. A badly lighted foundry is most dismal and depressing, conducive to apathy, inefficiency and accidents. Good lighting infuses a spirit of alertness to which the human element cannot fail to respond.

Whilst the mercury discharge lamp is recommended as giving the best definition in the depths of moulds, the Author favours the view that this type should be used in conjunction with the tungsten lamp, which offsets the unpleasant colour associated with the former. A lighting system incorporating these two types gives an illumination approaching that of natural light. The importance of cleaning and maintenance is emphasised by the fact that in one factory it was found that lighting was improved by 50 per cent. after the fittings had been cleaned.

Safety, Hygiene and Medical Supervision

The national need for maximum production demands that labour wastage through accidents and sickness absence be kept to a minimum. To this end, efforts should be directed to the prevention of accidents and to educating the worker to the value of health. Improved conditions in foundries will be matched by improved standards in safety and health for those who work in them. The new entrant must be given safety instruction and trained to recognise key points to safety as well as those of production. The provision of protective equipment is not sufficient; supervision must ensure that it is properly used and maintained. The wearing of goggles whenever necessary is of particular importance, since sight is the most important of the senses in industry. The use of worn and defective tools, a frequent cause of injuries, should be discouraged with a readiness to replace them.

Posters, slogans and exhibits can also be used with effect to educate the workers to use caution and foresight. Safety notices on plant should be painted in bold type on boards and kept clean. Posters must be frequently changed and contain an element of variety and appropriateness in order to maintain interest. Good suggestions can be obtained from the workers and "safety" should frequently be on the agenda of the shop committee meetings.

The fatigue factor, also, has some influence upon accident causation. Experiments have shown the value of rest pauses, both to the worker and industry. Official rest pauses sanctioned by the management have a far greater recuperative effect than those taken surreptitiously. Many progressive foundries have already provided a large number of aluminium moulding boxes. The introduction of this amenity has been welcomed by the foundry workers and they have responded to the reduction of fatigue by increasing production.

Consideration of the mental and emotional reactions of individuals and groups is important, since they also have a bearing upon health and fatigue. Apart from contributing to the enjoyment of living, good health is conducive to effecting good standards in speed and quality of work. Cleanliness is a basic factor, and the matter of washing facilities is dealt with in another section of this Paper. Drinking water should be available through modern types of fountains. Oatmeal, barley and saline drinks are much more refreshing in warm weather than water alone, and the provision of refreshments during rest pauses is to be encouraged.

The minimising of exposure to extremes of temperature and irritating gases are also important factors in maintaining good health. Medical supervision is probably the most important factor in maintaining a high

FIG. 9.—GENERAL VIEW OF THE FETTLING SHOP.

standard of health and hygiene. It is now common practice to examine medically all entrants to the foundry and, while periodic examination is advisable, it is not so important if working conditions are good. At the works with which the Author is connected, the medical officer and dental surgeon are each in attendance at the works' clinic one day each week. A feature here is the provision of dental inspection and treatment twice each year for all employees up to the age of 18 years.

Baths and Washing Facilities

A washroom with showers and lockers is shown in Fig. 10. The provision of these amenities is a matter upon which no general recommendations can be made. Rather it is one which calls for the consideration by each foundry concern in order to meet its own domestic needs.

While opinions may be divided as to whether these facilities are essential to all foundries, the Author holds the view that their installation and correct use will improve the status and general health of the workers. In a book[8] published in 1925, Sir Thomas Oliver states: "As workmen rise in the social scale, not only must they be given, but they will demand, washing facilities in good surroundings."

Evidence as to the accuracy of this statement is given in reports which the Author has received from two well-known foundries concerning the provision of baths for their foundry workers.

One layout is shown in Fig. 11.

The second reports that at the beginning they were not certain how many of the foundry workers would use them. The original estimate was for 50. Since being opened, they have proved extremely popular and requests have been made for accommodation for 200. A further request has been made for amenities for the female coremakers.

The other company reported in detail concerning the equipment and the procedure of the workers in using the baths and changing facilities. In this case, the average time taken by a worker between entering in his working clothes and walking out clean and dressed is 15 minutes. A committee of workmen is responsible for the baths being correctly used and not abused, and a man is employed to keep the baths and everything appertaining to them clean. This company states that up to the present the men are extremely keen and delighted to have these facilities, and believe that the baths are even more appreciated by the men's wives. They conclude by saying that they feel the expense has been well worth while.

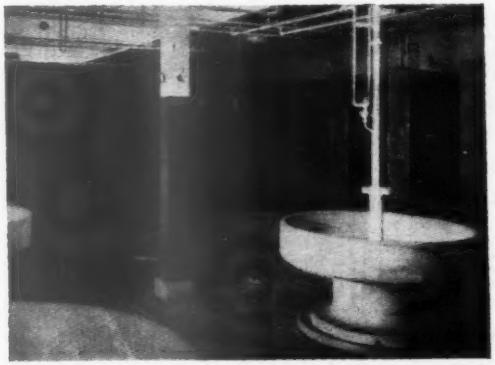

FIG. 10.—WASHROOM, SHOWING LOCKERS IN THE BACKGROUND.

The inculcation of personal cleanliness appeals to all who have a regard for their appearance, comfort and health. In some cases it is necessary to educate the worker to the value of these facilities. To this end, the Author would suggest that, where these facilities are provided, their correct use should be a condition of apprenticeship.

The layout and equipment is, of course, dependent upon individual requirements, but in all cases the floor should be tiled to permit thorough cleaning. Where baths and showers are provided, a foot bath is essential to prevent "athlete's foot," which is a danger in public bathrooms.

At the Home Office Industrial Museum in Horseferry Road, S.W.1, the latest types of washroom equipment can be seen, in addition to many exhibits and photographs illustrating every aspect of industrial safety and hygiene, and upon which advice is readily given by the inspector in charge.

It is interesting to note in a Paper[9] presented on behalf of the South African Branch of this Institute "that changing room accommodation must be provided to the satisfaction of the inspector," which in the case of foundries entails the provision of hot and cold water in changing rooms, showers and individual lockers for employees.

Conclusion

There is little doubt that the improving of the standards of foundry working conditions will appreciably contribute to the productiveness of the human factor. Furthermore, good working conditions will do more than anything else to assure a prosperous future for the industry, which is an essential one in our national and civil life.

The future is dependent not only upon adequate recruiting, but also upon the retention of a higher percentage of entrants than hitherto. These are significant factors, particularly to the jobbing section of the industry, which demands a lengthy training and a minimum of labour turnover.

Few will deny the value of modern forms of publicity as recruiting aids. The full benefit of these cannot accrue until the foundry industry has won the good will of the community *via* improved conditions. Statements have appeared in the national Press to which the foundry industry must give a practical answer.

The logical method of refuting such statements is to establish good conditions and invite the public to see

Foundry Conditions

them. The industry's policy concerning this problem must be framed to meet the needs of the human factor, with particular attention to the youthful entrant. No foundryman hesitates to instal a mechanical unit to meet the needs of production. If the machine is maintained in good condition and repair, it invariably gives trouble-free service, and proves a sound investment. If this be so of the machine, how much more will this principle prove itself when applied to the human factor, by maintaining good working conditions?

There is much scope for a human approach to this problem at ethical standards, one aspect of which is that there should be provided a standard of conditions for others equal to that which would be desired for oneself under similar circumstances.

Good foundry working conditions may be anything from a tidy shop to elaborate colour schemes and equipment. Between these extremes every foundry management can set a standard to meet its own domestic needs and circumstances. Management, in taking the lead in establishing good conditions and amenities, has the right to expect co-operation from the workers in making the best use of the facilities provided.

Both sides must be as one in accepting them on their merits, if a full and mutual benefit is to accrue.

The present generation of foundrymen has shown a remarkable trend towards a scientific approach to the industry's problems, through which it has attained an eminent technical position in industry.

The immediate need is that the industry should make a definite approach on similar lines in all matters relating to the human factor.

Accordingly it calls for a response equal to that which is applied to technical development.

Are there within this generation foundrymen equal to the challenge this problem offers?

The answer to that question will be shown by the standard of conditions existing in our foundries in future days.

"Safety First" Film

At the conclusion of the reading of the Paper the film "Safety and Hygiene in the Foundry" was shown. This showed pictorially the efforts made in an American foundry towards inculcating care in the use of small tools and popularising the use of the company's first-aid facilities.

Acknowledgments

In conclusion, the Author expressed to Mr. E. M. Currie his sincere thanks for the suggestion which prompted the preparation of the Paper. He was indebted to the International Meehanite Metal Company, Limited, for the use of photographs and slides, for the loan of the film and for information which was included in the Paper. He also thanked Glenfield & Kennedy, Limited, and Prince-Smith & Stells, Limited, for information concerning foundry baths. He desired, also, to express his appreciation to the management of Ransomes & Rapier, Limited, for facilities and permission to present the Paper, although the views expressed are not necessarily endorsed by them; and to Mr. S. V. Broome for his assistance in taking photographs and making slides.

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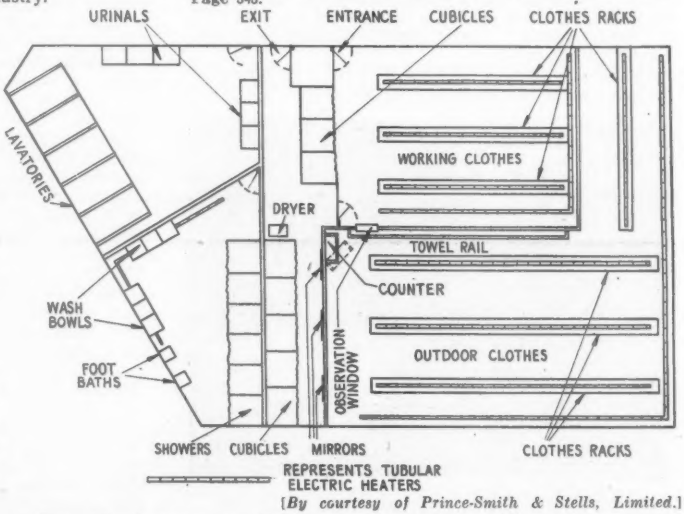


[*By courtesy of Prince-Smith & Stells, Limited.*]

FIG. 11.—LAY-OUT OF WASHING AND CHANGING FACILITIES FOR A YORKSHIRE FOUNDRY.

★ Cast Crankshafts ★

London Branch Discussion of Mr. R. B. Templeton's Paper

At a meeting of the London Branch of the Institute of British Foundrymen, held in the Waldorf Hotel on October 29, the Branch-President (Mr. E. M. Currie) presiding, a Paper on the "Production of Cast Crankshafts," which was preceded by a cinematograph film showing details of the operation in the foundry, was presented by MR. R. B. TEMPLETON (Senior Vice-President of the Institute and managing director of Ealing Park Foundry, Limited). This Paper, which was originally presented to the Institution of Automobile Engineers, was printed in our issue of May 1 and May 8, 1947.

Discussion

The BRANCH-PRESIDENT (Mr. E. M. Currie), opening the discussion, said that a point which, in his opinion, Mr. Templeton had not dealt with sufficiently was the way in which he and his executive staff had lived and worked for a good many years with the problem of casting crankshafts. The Paper and the film afforded an indication of the meticulous care with which every detail of crankshaft manufacture had been studied, even down to the size and shape of the runner basin, the careful placing of the runner bars, and so on.

Mould Assembly

MR. B. LEVY said that, from a quick count on one of the illustrations, he had noted that there were something like 16 cores, and Mr. Templeton had stated that the mould was poured, without any further encasing, as a core assembly. He asked whether the cores were bolted together to prevent leakage of metal in pouring and, if so, whether the bolts for locating the cores in alignment were also used as tie bars.

MR. TEMPLETON replied that there was a bottom steel plate from which there were two or three long bolts extending right to the top of the whole assembly, and there were cross-pieces, so that the whole could be tightened down externally. They could not use the locating holes for bolting down the cores.

MR. J. F. CHAMBERS (Ealing Park Foundry, Limited) pointed out that the location holes were used as runners. There were just two external bolts.

A MEMBER said he was not quite clear, from the film, about the exact method of pouring the crankshafts, the arrangement of the basin and the rate of feeding.

MR. TEMPLETON replied that the runner basin had two downgate openings in which stoppers were inserted. When the runner basin was full, the two stoppers were removed and the metal dropped through the downgates which were outside the mould proper. On reaching the bottom of the downgates, the metal filled up to the level of the first ingate, then across the ingate, and into the lowest part of the mould proper. As the mould filled, the next ingate came into operation, and so on up the whole series of ingates until the mould was completely filled. By this method hot metal was continually being fed to the relatively cooler metal which was already in the mould.

MR. E. J. WILLIAMS recalled that he had had some experience of casting crankshafts in 1934, and many wasters were made. They could not melt the metal in the cupola, but had to use a rotary furnace. The crankshafts were cast by the building up of the cores, as at the Ealing Park Foundry, and charcoal was used to keep the metal hot at the top. Chilling was adopted, and the chills had to be copper coated.

MR. TEMPLETON commented that that was the Ford process.

MR. WILLIAMS agreed.

MR. TEMPLETON added that in casting crankshafts at Ealing Park Foundry they had not used chills at all.

Alloy Iron Crankshafts

DR. A. B. EVEREST (Past Branch-President) congratulated Mr. Templeton on his presentation of his subject. He did not feel, however, that Mr. Templeton had been quite fair to some of the alloy iron developments in connection with crankshafts, which developments were by no means inconsiderable. Indeed, in 1937 he had seen an alloy iron crankshaft 17 ft. long, which had passed all its tests and had been accepted by the United States Navy. The production of the alloy iron crankshaft extended back over a considerable time, and there was a very considerable production of nickel-molybdenum cast-iron crankshafts in this country to-day. Mr. Templeton had shown that a considerable amount of money, trouble and labour could be saved by changing from a forging to a casting. Having got that far, it was essential to use the best quality of material and workmanship in the making of the casting; and he paid tribute to Mr. Templeton in saying that, whatever the metal used, the first essential was to make a sound casting, because if there were blowholes the casting would be useless. He complimented Mr. Templeton as to the way in which he had insisted upon good moulding methods and general precautions in order to produce sound castings.

In regard to the metal, Mr. Templeton had made one or two remarks which might be construed as misleading. He had rather implied that if one used irons of high strengths, such as 35 tons per sq. in., one lost in respect of other properties—assuming that, by alloying and other methods, one could increase the strength, but at the same time the iron must be of low carbon content. That was not true. For example, the acicular cast irons were alloy irons having extremely good mechanical properties, and they were not necessarily of low carbon content. One of the outstanding features of the acicular irons was that at a carbon content of about 3 per cent., they gave high strength; high impact values and other valuable properties without difficulty. Those were just the

Cast Crankshafts—Discussion

properties needed in a crankshaft, and that was the type of iron which had been developed and used extensively for shafts. In 1937 the acicular irons were not known, but the type of crankshafts he had seen in the United States were actually made of nickel-molybdenum irons, having properties of the type to which Mr. Templeton had referred. They gave good machinability and yet had quite high hardness, the Brinell figure being well over 300, and the castings machined perfectly. The wear resistance of the castings proved excellent.

Nothing had been said by Mr. Templeton about the material he used, as to whether there were any alloys in it; and, of course, the foundry aspect was of more importance to the meeting than was the material. But it was significant, in view of his remarks about alloys and their cost, that some data recently published in the United States by an authority associated with Mr. Templeton's own organisation showed that the best properties in cast iron for crankshafts were given by an iron of the nickel-molybdenum type. The irons used by Mr. Templeton were excellent, and so were the alloy irons; put the two together and one would produce something of superlative quality.

Commenting on Mr. Templeton's statement that the size of the crankshaft illustrated in the film probably constituted a record, Dr. Everest said that that might have been true at the time the film was made, but he knew of shafts being made in this country weighing up to 5 tons; he could not confirm that they were actually finished, but he knew of arrangements which were in hand for their making.

Price Competition

MR. TEMPLETON assured Dr. Everest that he used nickel, molybdenum and also copper in making crankshafts. But he had stated in the conclusion to his Paper that it was becoming very much a commercial matter. It was necessary to convince engineers that the cast crankshaft was a good proposition, and one way in which to convince them was to show them something cheaper. They would not be interested in buying a cast iron crankshaft at the same price as the steel crankshaft, and it was necessary to overcome the antagonism which was known to exist regarding the cast shaft. That was why he had emphasised his view that the founder must definitely get down to a low cost basis. Anything by way of materials which added to the cost of shafts was to be avoided. It was unquestionable that alloy additions improved the properties of the final shaft.

As the strength increased, whether in iron or steel, there was some loss of a certain amount of other good properties. For instance, mild steel was much less sensitive to notch effect than was a 50-ton per sq. in. high-alloy steel. In the same way a low-grade cast iron was less notch sensitive than a high-duty iron, and it had a better damping capacity.

He believed he had referred to the crankshaft illustrated in the film as being *one* of the largest cast shafts, and not *the* largest.

DR. EVEREST, commenting further on the importance of cost, said his experience was that during the war, under pressure from the Iron and Steel Control, there had been considerable interest in cast shafts owing to the shortage of forging capacity, and some people who were interested in the matter had held that the cast shaft was a war-time expedient and had suggested that the casting of shafts would end with the war. Yet interest in the cast shaft had continued after the war, and he believed it was definitely because engineers were now finding that the cast iron shaft, particularly in respect of wearing properties, offered something which steel just could not give.

MR. TEMPLETON concurred, and said he was agreeably surprised that inquiries were still being received and that the demand for cast crankshafts was growing. He did insist, however, that cast crankshaft founders must retain the basic advantage that they had and see to it that prices were competitive with steel shafts.

Permanent Mould Crankshafts

MR. A. R. PARKES recalled that in some literature from the United States in connection with permanent mould castings he had come across a case two or three years ago where pressure die castings were used for crankshafts. He asked if Mr. Templeton could say anything about that. Commenting on Mr. Templeton's pictures illustrating the use of square risers, he said that from the point of view of efficiency, a round riser seemed to offer technical advantages over a square one.

With regard to the types of metal to be used for casting crankshafts, whether alloyed or plain, he seemed to remember that in the original Paper the Ford material was referred to as having been designed especially for crankshafts, instead of being a standard material such as Meehanite. He asked if Mr. Templeton could give figures for the Ford material or other materials to compare with those already given.

MR. TEMPLETON replied that the pressure die cast crankshaft was new to him; but he believed it was being made in America, and there was no reason why we should not be able to cast the smaller shafts in this country in that way. We should certainly have a shot at it.

MR. C. D. POLLARD said he believed the crankshafts to which Mr. Parkes had referred were being made at Derby by the Qualcast group, using permanent moulds. They were small shafts.

MR. PARKES said he was referring to crankshafts weighing up to 5 cwts. made as pressure die castings.

MR. TEMPLETON agreed that it might be possible to make them in that way if one had the die for the job. Small ones about 8 in. long, such as were used for a small compressor for the household refrigerator, would prove suitable. He agreed that square risers were not so good as the round ones. He could not give the analysis of the Ford material, but he believed it contained something in the nature of 1.4 per cent. carbon and 0.8 per cent. silicon. He added that it required two heat-treatments. His material contained about 2.9 carbon, 1.4 silicon, 0.1 sulphur, 0.8 manganese, with 1.0 per cent. of copper and 0.5 per cent. molybdenum.

(*Continued on page* 14, *column* 2.)

A Strickled Core for a Lead Pot

By W. Gudgeon

Certain designs of cores lend themselves to the employment of strickles for their production and because of their simplicity and cheapness strickles are readily adopted in place of a corebox that would be too costly to make when the number of castings required is small. Two methods of strickling can be worked, one by the use of a spindle with strickle-board attached and the other by using a strickle minus the spindle, but with a frame to guide the strickle as it is pulled forward by the hands.

Occasionally, both mould and core can be made by strickles, though the strickles need not be operated on the same lines. Such a casting is here represented by Fig. 1 of a lead-pot intended for holding lead melted

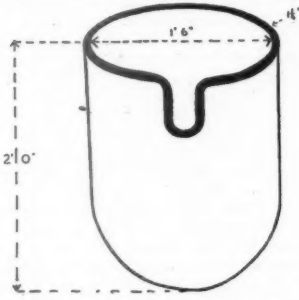
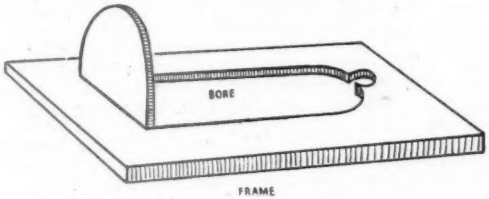


FIG. 1.—POT CASTING FOR MOLTEN LEAD.

by high-pressure gas. For making this, both methods of strickling the sand were used. The mould was worked to the required design by sweeping the strickle round the spindle and the core was shaped by the second method of strickle and frame shown in Fig. 2.



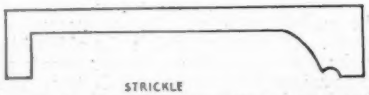


FIG. 2.—STRICKLE AND FRAME FOR FORMING THE CORE.

The core was made in halves and consisted of sea sand and oil substitute and was built on a core iron of simple design (Fig. 3). Corresponding slots were arranged at both ends of the irons for the purpose of bolting both halves securely together. The core which formed the spout was later fastened on to the main core. Because eight castings in all were required, wrought-iron rods, ¼ in. dia., were cast into the core irons, since cast-iron prongs were liable to be broken off when knocking the core out of the casting. The only cast-iron prongs were the ones at the wide end of the irons, and these were made strong enough to hold the core suspended from the crane.

To build up the core the frame was laid on a level plate and a thin layer of sand spread inside it. The core iron was then bedded on the sand and more sand was rammed between the bars until it was level with the top of them. The wrought-iron rods were then bent to shape so that the strickle would just pass over them. Ashes were then packed tightly on top of the core iron and over these core sand was rammed and the surplus strickled off, leaving approximately 1¼-in. thickness of sand over the ashes. When the halves were dried and bolted together, hook-bolts were fixed to the cast-iron prongs for the purpose of bolting the core to the top part of the mould after it had been set centrally in the bottom part. Top part and core were then hoisted off together and the bottom part of the mould was finally inspected. The finished core is also shown in Fig. 3. The weight of casting was 4½ cwts. and the thickness of metal 1¼ in.

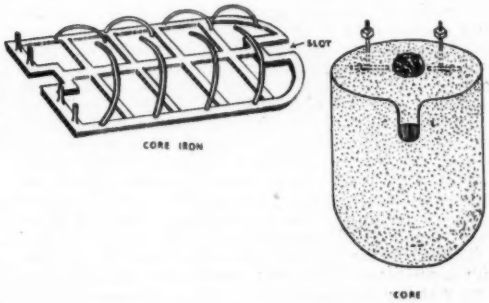


FIG. 3.—CORE IRON AND FINISHED CORE.

ALTHOUGH THE 1947-48 "F.B.I. Register"—the only complete guide to members of the Federation of British Industries and their products—has only just been delivered from the printers, the phenomenal demand for the first edition for eight years has already exhausted the supplies available for the home market. Overseas orders, however, will be accepted as usual.

A Note on Pattern Construction

By "Tramp"

Jobbing founders receiving examples of work from various patternshops are often struck by the wide variation in the methods of construction adopted for almost identical patterns. Some patterns supplied are so flimsy that they will not stand up to the work required from them, whilst others are so heavily constructed that undue effort is needed to lift them and withdraw them from the mould, and often this results in a torn mould which needs considerable patching.

It is rather difficult to decide which type is the worse, as each has its drawbacks. The best pattern is one which has been constructed in such a manner as to take advantage of the strength afforded by an intelligent building up of timber to eliminate distortion due to the shrinkage of the wood, but which is, at the same time, sufficiently light so as to be easily handled. Any loose pieces to be formed in the top box should be made so as to lift readily and not tear the mould.

After considering a number of examples of what the writer considers unduly heavy patterns, he is of the opinion that these are almost invariably constructed for easy patternmaking rather than for efficient moulding; indeed, it appears in some instances that the patternmaker has entirely lost sight of the fact that the patternshop is the toolroom of the foundry and that patterns are not ends in themselves but means to an end.

Making a Test Bedplate

A particular example is called to mind of a pattern for a certain type of test bedplate in which the metal thickness was 2 in. and which carried a number of thickness pieces to compensate for heavy tee-slots cored out from the face. This pattern was made of solid timber and, being in the region of 12 ft. by 5 ft. overall size, was consequently of considerable weight. This, however, was not the chief fault; the thickness pieces were made fast to the main body of the pattern with a fillet carved round them. Now, while this was evidence of a realisation on the part of the patternmaker that sharp angles are detrimental to good foundry practice, it revealed the lack of appreciation of the moulder's task in lifting the top part of the mould off the pattern. With a pattern of this size a certain amount of tearing down was inevitable when the various pieces were *fixed* to the main body of the pattern. The ideal would have been for these pieces to have been dowelled in position so that they would lift with the top and thus save a considerable amount of the moulder's time otherwise spent in patching the mould. Such a procedure might eliminate the risk of a waster caused by the "washing" of that portion of the patched mould.

It cannot be too often stressed that before patternmaking is commenced, the foundryman should be consulted and his opinion asked as to the most suitable way for the pattern to be constructed so as to assist him eventually to produce castings efficiently and with reliability.

An Epitaph

By S. W. Hanson

A Yorkshire paper printed a memorial notice of one, J. Casey, who died one year ago. This man was an unskilled or semi-skilled foundryman and worked until he was 75 years of age. He produced ploughshares and was in charge of three other men. They used to cast 700 shares every morning between 9 a.m. and 12 noon.

The method comprised a circle of cast-iron bottom moulds. About 70 of these were on a stand about 12 in. from the ground and formed a ring called by the men the "circus." Cast-iron inserts were used for the fitting holes for the plough tyne. By these inserts, ⅜-in. dia. cored holes were inserted in the casting to enable the share to be firmly attached to the tyne and to be so accurate as to eliminate drilling of the holes. Benches were positioned in the centre of the ring and air pipes arranged to blow out the iron moulds after each cast. The metal pouring arrangement was a shank fitted into the frame and the single end mounted on a two-wheel carriage, so that one man could push it round the ring and cast single handed. Casting took place continuously after all the sand top mould halves were put on to the iron moulds with the inserts and cores in place. Weights were added by one man. One man took off the weight and opened the boxes after casting and replaced another sand top part after the plug had been withdrawn and the mould cleaned out and the castings removed. Cores were fitted by two men. The man referred to above performed the casting operation.

A Worthwhile Revival?

During the first world war two more of these rings were used and the output must have been a very useful contribution to the country's effort. The changing over to internal combustion engines for ploughing led to the scrapping in 1936 of all this arrangement, and now farmers complain of shortages of ploughshares. In these days, with the help of mechanical handling of sand, it appears that even better results could be obtained by this method. The castings were produced at a labour cost of 1d. each; the cost of the cast-iron bottom mould and chill inserts averaged 1d. each; and the castings each weighed an average of 8 lb. They were sold by the firm at an average price of 1s. and a farmer said he paid 2s. 6d. each. The cost of labour covered moulding, casting, and fettling; the castings had to show a certain depth of chill and to be strong enough to stand up to the conditions when ploughing.

To return to the man who, after many years of this work had become bent but not broken; at turned 65 years old he needed a new job. He volunteered to fire the core stoves. These were fired in the old-fashioned way inside the stove and, while younger people came and left, he remained until the end of his days. This is an example of an industrious worker who served his employers for 50 years, who passed over unknown and unsung.

Patternmaking and Foundry Practice

Mr. S. A. Horton's Presidential Address

In the course of his Presidential Address to the East Midlands Branch of the Institute of British Foundrymen, Mr. S. A. Horton said:—

Mr. Roxburgh and Gentlemen: The trade of patternmaking is undoubtedly one of the more recent developments of industry. The art of making models to be reproduced in the softer metals for ornamentation or domestic use by casting in sand or some other impressionable medium, is certainly of considerable antiquity, but until the introduction of power machinery, wrought iron was invariably used in structural design and for other purposes for which the more ductile metals were unsuitable, therefore I feel quite safe in surmising that the patternmakers of the Middle Ages were the woodworkers whose work enriched the ecclesiastical and public buildings of that time. Those men still have the envy and admiration of such judges of wood craftsmanship as have been privileged to examine their work.

Towards the middle of the last century industrial development created a demand for a class of skilled workman related to, but more versatile than, the blacksmith and millwright. These men, together with the shipwright, were assuredly the forerunners of the numerous artisans now employed in the shipbuilding and engineering industries. The first machines such as the printing presses, textile machines, etc., having cast-iron parts, were, I suggest, probably constructed by a millwright who first prepared the necessary patterns, then fitted and erected the machines from castings supplied.

The patternmaker is sometimes claimed to be the successor to the millwright (which is most probably true so far as the wood patternmaker is concerned), but he is equally the father of the fitter and other tradesmen who are concerned in the manufacture of machines.

The Birth of a Craft

Evidence of this formation of a distinct trade can be found in the tool boxes of older patternmakers, the long gouges and chisels which were used in the early days for gouging the teeth of large mill wheels, proving that patternmaking was not completely severed from millwrighting work.

When patternmaking was in its infancy, there were no strict lines of demarkation, and many pioneers to the trade were recruited from the ranks of all woodworking trades. In those leisurely times the skill of the craft was of prime consideration in the preparation of a pattern; only hand tools were used. It is not suggested that the modern patternmaker is less skilled, but rather that pressure of competition has demanded that hand work be reduced to a minimum and machines be used that do the same work equally well in a fraction of the time. There are records relating to the serving of regular apprenticeship to patternmaking from 1870 and, during 1871, patternmakers on the Tyne are recorded to have participated in a nine hours' industrial strike.

Since patterns are used to reproduce castings, a patternmaker had to understand the principles of moulding. By reason of his training he was able to read a drawing exceptionally well and this skill was quickly recognised. Early industrial design and foundry technique required patterns of a material that could be readily formed into the required shape, withstand a certain amount of rough usage and capable of modification if and when necessary. Wood proved to be a most satisfactory material, and its qualities are still appreciated although supplies are at the present time somewhat limited.

Metal Patterns

Progressive development necessitated the introduction of multiple pattern equipment which resulted in further advancement in the craft—the use of metal patterns. In the early stages metal patterns were rather indifferently prepared, due to the fact that this type of work was considered inferior to wood work and whenever possible the preparation of metal patterns was delegated to either the fitter or a semi-skilled worker. Gradually the advantages that metal pattern equipment possessed as compared with wood for certain conditions was realised and with the introduction of the moulding machine, the skill of the metal patternmaker was established.

The core blowing machine increased the scope of the patternmaker; this new technique required careful attention to detail and when its ultimate potentiality was realised the necessary specialisation was achieved and mutual co-operation has resulted in outstanding success.

Foundry mechanisation quickly proved that a mould was only as good as the pattern equipment from which it was produced and the production of a consistent casting depended on sufficient attention being given to the design and preparation of the pattern. This resulted in a very close liaison between the foundry and pattern shop. The preparation of equipment for a mechanised foundry is essentially of utmost importance, and very special attention must be justifiably paid to the pattern shop as it is the foundry tool room. The equipment installed should be related to the problems to be tackled, and the individual employed there should have the opportunity of a specialised training. It will be appreciated that the ingenuity of the patternmaker is often taxed to the limit to provide pattern equipment requiring the minimum of skill to manipulate.

Quantity Production

Obviously quantity production methods frequently call for more than one set of patterns to be in work at a time. It will be appreciated, therefore, that in the

Patternmaking

early planning, provision must be made for the accurate duplication of production pattern equipment which must essentially be interchangeable to minimise foundry production hold-ups due to maintenance work on any individual item. This accurate duplication to extremely fine limits has been facilitated by the use of the Keller duplicator. Patterns made in this way can be released to the foundry with the minimum of sampling, since they are a reproduction of patterns already proved by the inspection department. In recent years there has been a definite tendency for a patternmaker to specialise. The main value of specialisation lies in the opportunity it affords of getting down to production details in the design of pattern equipment. It matters little whether the speciality be loam work, large patterns for rolling mill plant or small repetition work, the principle remains the same and providing maximum efficiency in a particular sphere be obtained such specialised knowledge can be applied to advantage.

We have to-day* had the pleasure of inspecting the Eaton-Erb machines which have contributed to the further advancement of the patternmaking craft. The cast-iron dies used by Qualcast, Limited, are prepared by the pattern shop. I understand the design and performance of these dies are superior to American practice; so rapid and successful has this plant proved, that castings now considered standard production would not have been attempted 18 months ago.

The production of a great variety of castings from commercial metals to meet exacting specifications has converted foundry practice from what used to be an industrial art into an exact science. In the future, therefore, it must be possible for the foundry to be able to place reliance on the pattern shop to supply equipment suitable in all respects to enable these demands to be satisfactorily realised. This will place a heavy responsibility upon the pattern shop, but provided the problem be approached with intelligence and a sound appreciation of the foundry requirement, ultimate success will be achieved.

The Future

Progress in industry necessitates the constant search for better and more economical methods, as well as materials for production. American patternmaking practice is now experimenting with the plastic pattern which, it is claimed, has been found to be superior to wood or metal for either machine or hand moulding. It requires less vibration to withdraw from the mould, needs no protection against moisture absorption, and can be left in the sand as long as necessary without detrimental effects. Practical experience may disprove some of these claims, but it serves to illustrate that new materials will continue to be developed which may require a special technique, but if they prove superior to those now in use they will be adapted to pattern construction.

For the future craftsman we must depend upon the young men now coming into the trade. To look ahead, what are we going to do when all children have had a secondary school education, or at least have been to school until the age of sixteen? There will be changes —inevitable changes—and we must now plan to meet those conditions. These youths will rightly expect to receive a wide practical training in craftsmanship so planned under intelligent supervision to enable them to have the broadest possible basis of knowledge and experience on which to build their future careers.

The pattern shop can expect competition in recruitment of apprentices but, providing the problem is handled with intelligence and the right type of personnel secured, the future of the craft will be assured. The patternmaker in the past has never directed, but has rather assisted, foundry development; therefore, let our industrial relations be carried on in such a way that we welcome co-operation, and if we can accept this conception of industrial relations an orderly structure to the benefit of all will result.

* This address was delivered following a visit to the works of Qualcast, Limited, of Derby. The meeting concluded with the reading of a Paper on "Ferrous Die Castings," by C. D. Pollard, C. A. Payne, and H. A. Redshaw.

ACCORDING TO Mr. R. E. Chapman, who addressed the Steel Founders' Society of America, fettlers habitually handling pneumatic chippers should weigh at least 11½ stones. Lightweight fettlers have to exert more effort than the heavier men who use their weight to advantage and reduce fatigue.

(*Continued from page* 10)

Cast Crankshafts—Discussion

Vote of Thanks

MR. G. C. PIERCE (Past Branch-President), proposing a hearty vote of thanks to Mr. Templeton, said the meeting had been entertained very much by a very clever Paper and a very worthy film. It was most pleasing that Mr. Templeton intended to show the film, if he possibly could, in the schools and technical institutes, in the hope of interesting the students sufficiently to make them want to come into the founding industry. If the film could be exhibited in a number of schools and institutes, there was no question but that it would serve a very useful purpose.

Having had the pleasure of seeing some of the crankshafts and of seeing them cast, he said there was no doubt a big opening for cast crankshafts, and it was indeed a very great pleasure to propose the vote of thanks.

MR. C. C. BOOTH, J.P., seconded, and the vote of thanks was accorded with acclamation. Mr. Templeton suitably replied and, in his response, paid tribute to Mr. and Mrs. Kingston, who had produced the film and who were present at the meeting; he hoped it was appreciated what a fine show they had made of it.

On the motion of the Branch-President, the thanks of the meeting were extended to the projectionist and lanternist—Mr. Barrington Hooper, C.B.E. (Past Branch-President) and Mr. E. H. Browne.

Notes from the Branches

Newcastle-upon-Tyne

There was a large attendance at the December meeting, which took the form of an open discussion, as illness prevented Mr. S. Finch from attending to give his Paper, entitled "Practical and Theoretical Aspect of Feeding Castings." The sympathy of the meeting was expressed with Mr. Finch. The first subject that commanded attention was the different methods of drying moulds, cores, etc. Mr. G. Elston gave an account of his experience, particularly of the use of gas. He expressed doubt whether large moulds were really dried or only sufficiently dried to enable casting to proceed with safety. Cost of different forms of drying had to be considered. After an animated discussion, the majority view was that, while with gas the temperatures were more easily controllable and demanded less labour, the use of the coke brazier still had its uses, particularly if the man in charge was capable and experienced. It was considered that the depth of the dried section in a mould need not penetrate to the backing, otherwise there might be cracking. Attention must always be given to the ventilation and clearing of fumes both in an open mould and in a core stove. It was the general opinion that the white deposit on a mould arising from the use of a coke brazier was not detrimental to the ultimate casting; with gas this deposit did not occur. Thermostatic control of the maximum temperature was easily applicable with gas. Coke fires frequently retarded drying by acting too quickly on the skin of the mould.

Other questions arose dealing with difficulties and troubles met with by members and helpful suggestions were made for their solution.

Publication Received

Automatic Laundry.—We have received through Mr. T. Parkinson, secretary of the Council of Ironfoundry Associations, some trade literature and specifications issued by Bendix Home Applications. Limited, of 99a, Park Lane, London. W.1.

The specification is extremely interesting as it discloses how to organise a factory "launderette," by detailing, together with the layout, the number, cost and a multitude of ancillary data. For the uninitiated, it should be pointed out that the apparatus, by means of time and other controls, deals with bagfuls of soiled linen by slowish rotation in soapy water controlled as to temperature, by three rinses, and by near-drying through high speed rotary action. This leaves the linen in a suitable condition for ironing. The whole of the apparatus is so automatic that no supervision is necessary during the complete cycle. As a proposition for foundry owners to do a good service to the wives of their working staff, this system has every appearance of being of major interest. The reviewer suggests that his readers should familiarise themselves with its potentialities by writing to the Bendix Company.

V. C. F.

Book Reviews

National Insurance, by John Gazdar. Published by Stevens & Sons, Limited, 119 and 120, Chancery Lane, London, W.C.2. Price 3s. net.

On July 5, 1948, practically everybody is to be State insured, and the object of this book is to set out in readable yet strictly legal terms just what all this involves. The main features dealt with are family allowances (already in operation), and the new Act. Already some of the cash benefits assured are beginning to look somewhat "thin" owing to the increasing cost of living. The book is specially to be commended for its extreme clarity, the absence of legal jargon being noteworthy. The timely publication is of distinct value to the whole community.

Argonarc Welding. Published by the British Welding Research Association, 39, Park Crescent, London, W.1. Price 7s. 6d.

This pamphlet contains the results of four researches undertaken on the subject of the fusion welding of magnesium-rich alloys by the British Welding Research Association. Much of what is detailed is pioneer work carried out during the war. However, there is in one of the Papers by Doré, Percival and Silliphant information obtained from re-designed plant which is well capable of industrial application.

The Transactions of the Manchester Association of Engineers, for the Session 1946-47. Edited by T. Makemson, M.B.E. Published by the Association, St. John Street Chambers, Deansgate, Manchester, 3.

Unlike the last few, this volume contains no Paper of direct interest to foundrymen, but that does not imply that the standard has in any way been lowered. Actually from the angle of the mechanical engineer it may well be superior. The Presidential Address by Mr. Oscar Rendell on the machine tool trade was brilliant, whilst other Papers on handling, on steam propulsion and on flat surfaces attained a very high standard.

V. C. F.

House Organ

Zinc Bulletin No. 3

Published by the Zinc Development Association, Lincoln House, Turl Street, Oxford.

This issue shows real progress. It is suitably illustrated, informative and, above all, well laid out and written in easily readable English. As many copies were available at the Building Exhibition, much space has been devoted to this outlet for zinc. A photograph is reproduced of a trade sign over a chimney sweep's house in Cheltenham which has been carried out in sheet zinc. The owner has twice refused an offer by the British Museum to buy this early Victorian masterpiece of craftsmanship.

Personal

MR. R. E. DAVIS has been appointed a director of Thorn Electrical Industries, Limited.

MR. W. B. BAXTER has been appointed a director of the United Steel Companies, Limited.

MR. HARTLAND THOMAS has joined the Council of Industrial Design to take charge of its industrial section.

MR. C. J. LAKE has been elected chairman of the board of Lake & Elliot, Limited, steelfounders, etc., of Braintree, Essex.

MR. P. E. HOLDEN has been elected to the board of the Projectile & Engineering Company, Limited, Battersea, London, S.W.8.

MR. F. A. MARTIN has been elected chairman, and MR. F. W. ROWE vice-chairman, of the British Steel Founders' Association.

MR. T. W. MELLING, works manager of Hadfields, Limited, Sheffield, is retiring after nearly 50 years' service with the company.

MR. JOB HOLLAND and MR. R. J. PICKFORD have retired from the board of Pickford, Holland & Company, Limited, Sheffield, manufacturers of refractories.

MR. C. L. G. FAIRFIELD has joined the Mullard Wireless Service Company, Limited. He will act as assistant to the directors of the company in a technical capacity.

MR. E. H. BALL, deputy managing director of the British Thomson-Houston Company, Limited, is to be appointed managing director of the company as from to-day (Thursday).

MR. G. W. GRIFFIN, general works manager of Siemens Bros. & Company, Limited, electrical engineers, etc., of Woolwich, London, S.E.18, has been appointed a director of the company.

LORD FALMOUTH, chairman of the National Gas & Oil Engine Company, Limited, has been elected chairman of the Imperial College of Science and Technology in succession to the late Lord Rayleigh.

MR. H. BRADSHAW, who has retired after 30 years' service with Arthur Green, Limited, ironfounders, of Old Whittington, near Chesterfield, has received a presentation from the workpeople. From the management he has received a cheque for £50.

SIR GEORGE E. BAILEY, managing director of Associated Electrical Industries, Limited, has relinquished that position on his assumption of the office of full-time deputy chairman. MR. H. W. H. WARREN, deputy managing director, will be managing director.

MR. WILLIAM UDALL has been appointed chief engineer of the Brightside Foundry & Engineering Company, Limited. MR. A. F. DIXON has relinquished his position as chief engineer on reaching retiring age, but he will continue to serve the company as consultant.

MR. BERNARD W. METHLEY, chief chemist at the Steel, Peech & Tozer Branch of the United Steel Companies, Limited, is retiring after 45 years' service. Mr. H. E. Wright, a director and general manager, made presentations to Mr. Methley on behalf of the company and his colleagues.

DR. P. DUNSHEATH, president of the Institute of Electrical Engineers, 1945-46, and chairman of Woolwich Polytechnic, and MR. W. A. JONES, ex-general secretary of the Electrical Power Engineers' Association, have been invited by the Minister of Fuel and Power to become members of the London Area Electricity Board.

MR. JOHN COPE, superintendent at the Milton (Staffs) Works of the British Aluminium Company, Limited, received a presentation on December 17 to mark the occasion of his retirement. Mr. Cope has been with the company for 52½ years and on one occasion was elected to visit France as a representative of British workmen.

MR. JAMES FAICHNIE, foreman moulder at the Gowan Bank Ironworks, Falkirk, of M. Cockburn & Company, Limited, was on Christmas Day presented with a cheque from the firm in recognition of 60 years' service. The presentation was made by Mr. A. Stewart, a director and secretary of the company, who himself has almost completed his 60th year in the service of M. Cockburn & Company.

MR. D. DIGBY HAWLEY, manager of the sales department, who has been in the service of the company since 1919, has been appointed a local director of Hadfields, Limited, Sheffield. Three other local directors have been appointed. They are MR. ALEC JACK, who was recently appointed London manager after a number of years in the metallurgical and sales departments; DR. J. R. RAIT, the company's research controller; and MR. F. COUSANS, foundry controller.

Harland & Wolff's Output Record

The tonnage returns of Harland & Wolff, Limited, reveal that a new output record for the British shipbuilding industry has been established by the company. By launching from their yards at Belfast and Govan 16 vessels, totalling 183,509 tons gross during the year, they passed a 33-year-old record, set up by the firm in 1914, when the aggregate gross tonnage was 182,759. A record for output of main propelling machinery has also been created by the figure of 310,400 i.h.p., to which Belfast contributed 260,900 i.h.p. The company, in addition, completed Diesel machinery for land installations abroad and for auxiliary purposes totalling 49,000 i.h.p.

Harland & Wolff's output during the year covered a wide range of ship types, and comprised three passenger and cargo liners, a whale factory ship, seven cargo liners, two cross-Channel passenger and cargo vessels, three tankers, and the aircraft carrier Centaur.

Increases in Capital

Details of increased capital have been announced by the following companies:—

N. Stout & Company, Limited, general metal founders, etc., of Coleman Street, London, E.C.2, increased by £3,000 in £1 ordinary shares, beyond the registered capital of £2,000.

Blaw-Knox, Limited, ironfounders, etc., of Clifton House, Euston Road, London, N.W.1, increased by £250,000, in 200,000 4½ per cent. cumulative preference shares of £1 and 200,000 ordinary shares of 5s., beyond the registered capital of £150,000. The company was made public on November 27 last.

Coneygre Foundry, Limited, Coneygre Road, Tipton, Staffs, increased by £50,000, in £1 ordinary shares, beyond the registered capital of £50,000.

Loxdale General Engineering Company, Limited, Priorfields Foundry, Spring Road, Lanesfield, Ettingshall, Staffs, increased by £15,000, in £1 4 per cent. cumulative preference shares, beyond the registered capital of £1,000.

Priorfields Foundry Company, Limited, Priorfields Foundry, Spring Road, Lanesfield, Ettingshall, Staffs, increased by £22,000, in £1 4 per cent. preference shares, beyond the registered capital of £4,000.

J. Norton & Son (Metals), Limited, Priorfields Foundry, Spring Road, Lanesfield, Ettingshall, Staffs, increased by £15,000, in £1 4 per cent. cumulative preference (non-redeemable) shares, beyond the registered capital of £5,000.

Norton Industries, Limited, Priorfields Foundry, Spring Road, Lanesfield, Ettingshall, Staffs, increased by £124,900, in 2s. ordinary shares, beyond the registered capital of £100. The original capital has been divided into shares of 2s. each. The company was made public on December 5 last. The above increase is for the purpose of acquiring the issued share capitals of Priorfields Foundry Company, Limited, Loxdale Engineering Company, Limited, and J. Norton & Son (Metals), Limited.

John Ellicott & Son, Limited, ironfounders, engineers, etc., of 431, Uxbridge Road, Hatch End, Mdx., increased by £1,900, in 1s. ordinary shares, beyond the registered capital of £100.

Gledhill & Howiett, Limited, engineers, etc., of Foundry Street, Halifax, increased by £5,000, in £1 ordinary shares, beyond the registered capital of £10,000.

R. & L. Enterprises, Limited, engineers, etc., of Grangefield Road, Stanningley, Leeds, increased by £4,000, in £1 ordinary shares, beyond the registered capital of £1,000.

JOHN G. KINCAID & COMPANY, LIMITED, Greenock, have received an order to supply engines for four of seven tankers to be built on the Clyde for the British Tanker Company, Limited. They will also supply propelling machinery for another tanker built by Cammell Laird & Company, Limited, Birkenhead, for the same company.

New Consumption Trends in Nickel

Increased Canadian Deliveries

Nickel sales are still expanding, and world deliveries of Canadian nickel in all forms for the year 1947 will be in excess of those of 1946, states Mr. Robert C. Stanley, chairman and president of the International Nickel Company of Canada, Limited, in a review of the industry circulated to shareholders of the company. Canadian nickel deliveries last year in all markets will approximate those of the industry's greatest peacetime year of 1937, and shipments in the United States and Canada will show an increase of about 50 per cent. over 1937, he says.

Operations of the International Nickel Company at Copper Cliff, its mining and smelting centre, were substantially higher than in 1946, despite the continuing labour shortage. Nickel prices in the United States and the United Kingdom remained unchanged during the year. On November 21, the company announced a reduction of 1¼ cents per lb. in its price for refined nickel in the U.S.A. The reduction is effective from January 1, simultaneously with a like reduction in the U.S. import duty on refined nickel. The prices of nickel outside the U.S.A. are not affected by the duty and remain unchanged.

Mr. Stanley confines his review to nickel and its alloys, indicating many new trends of consumption. Of particular interest is the growing utilisation of high-strength low-alloy steels which contribute materially to the overall consumption of nickel by the steel industry. Nickel-alloy steels of the pre-war standard types have re-established salient positions in industry both in the United Kingdom and on the Continent, where they are once more taking a prominent part in the new steel specifications.

The past year saw a further broadening of the uses of "Monel," "Inconel" and other nickel alloys, as well as rolled nickel. The "Nimonic" alloys continue to be the standard turbine material for all British jet-propulsion engines, and the expanding field of electronics has brought many new uses of nickel and nickel alloys, such as in television. Mr. Stanley points out that throughout the world the general trend towards further use of pure nickel and cupro-nickel for coinage purposes has accounted for increased tonnage. The demands for most of the established applications of nickel electro-deposits have continued to increase.

Gazette

GERRARDS CROSS ENGINEERING COMPANY, LIMITED, is being wound up voluntarily. Mr. F. A. Pratley, 6, Bishopsgate, London, E.C.2, is the liquidator.

MEDSPIN ENGINEERING COMPANY, LIMITED, is being wound up voluntarily. Mr. S. J. S. Parker, 160-162, High Street, Acton, London, W.3, is the liquidator.

COLWYN BAY ENGINEERING COMPANY, LIMITED, is being wound up voluntarily. Mr. P. G. Gadd, Selby Towers, 29, Princes Drive, Colwyn Bay, is the liquidator.

Industrial Productivity Committee

Sir Henry Tizard to be Chairman

Mr. Herbert Morrison, Lord President of the Council, announced in the House of Commons the composition of the Committee of Industrial Productivity, which he has set up, in consultation with the Chancellor of the Exchequer, to supplement the work of the Advisory Council on Scientific Policy. Sir Henry Tizard, F.R.S., chairman of the Advisory Council on Scientific Policy and of the Defence Research Policy Committee, is to be chairman of the Productivity Committee, and the following members have been appointed:—

Sir William Stanier, F.R.S., formerly chief mechanical engineer, L.M.S., and Scientific Adviser, Ministry of Supply; Prof. S. Zuckerman, F.R.S., Professor of Anatomy, Birmingham; Sir George Schuster, chairman of the Cotton Working Party, and a member of the Council of the British Institute of Management; Dr. A. King, Director, Scientific Secretariat, Lord Presidents' Office, formerly Director, British Commonwealth Scientific Office, Washington; Sir Edward Appleton, F.R.S., secretary of the Department of Scientific and Industrial Research; Sir Claude Gibb, F.R.S., chairman and managing director, C. A. Parsons & Company, Limited, formerly chairman of the Tank Board; Mr. Hugh Weeks, of the Central Economic Planning Staff and a member of the Economic Planning Board; Mr. Robert Hall, Director of the Economic Section, Cabinet Office, and a member of the Economic Planning Board; Mr. E. M. Nicholson, secretary, Office of the Lord President of the Council; Mr. G. B. Blaker, Treasury (Economic Affairs Office).

The Committee will also include one or more employers (chosen in consultation with the Federation of British Industries and the British Employers' Confederation), and one or more trade-union members (chosen in consultation with the T.U.C.). The secretary will be Mr. E. D. T. Jourdain, of the Scientific Secretariat, Office of the Lord President of the Council.

Changes in Export Licensing Control

The Board of Trade have made the Export of Goods (Control) (Consolidation) Order, 1947, which came into operation on December 31. It consolidates the current Export of Goods (Control) Orders and makes some changes in the list of goods for which an export licence is required. Among items released from export licensing control are domestic water taps; hand and bench tools; electric boiling and heating plates and grill boilers; spectacle frames and parts thereof. Unassembled stampings and laminations of electrical sheet steel for incorporation in electrical machinery and apparatus have been added to the export licensing list, and licences will be necessary in future for their export to all destinations.

A MOULDER WAS KILLED and another workman badly injured in the ironfoundry of J. Blakeborough & Sons, Limited, Brighouse, Yorks, when a beam fell from an overhead crane.

Obituary

MR. WILLIAM DAY NUTTALL, of Arthur Lee & Sons, Limited, steelmakers, of Sheffield, died on December 16 at the age of 69.

MR. EDWARD KNIGHT GRATWICK, chairman and a technical director of Smethwick Drop Forgings, Limited, died on December 17 at the age of 65.

MR. PHILIP DEBBEL TUCKETT, a director of the British Electric Traction Company, Limited, and other companies, has died at the age of 79.

CAPT. HENRY JOHN BAMFORD, who has died at the age of 56, was a director of Bamfords, Limited, agricultural engineers, etc., of Uttoxeter, Staffs.

MR. ALEXANDER LYLE CARLAW, who died on December 16 at the age of 85, was a director of David Carlaw & Sons, Limited, printers' engineers, of Glasgow.

MR. FRANK DRIVER, who has died at the age of 78, was for many years engineering foreman of Dawson, Payne & Elliott, Limited, printers' engineers, of Otley.

MR. SYDNEY CONN, chief buyer of the Tees Side Bridge & Engineering Works, Limited, died recently at the age of 69. He had been with the company for 28 years.

MR. THOMAS P. HEADLAND, managing director of Thos. P. Headland, Limited, engineers' merchants, etc., of Westminster Bridge Road, London, S.E.1, died on December 17 at the age of 60.

MR. PETER BLACKWOOD, at one time foundry superintendent of the Ford Motor Company, Windsor, Canada, died recently. He was an ex-student of the Royal Technical College, Glasgow.

LT.-COL. ARTHUR HIBBERT, who died on December 19, was general manager of the Millom & Askam Hematite Iron Company, Limited, Cumberland. He was also a director of the North Lonsdale Iron & Steel Company, Limited, Ulverston, Lancs.

MR. JOSEPH H. THOMPSON, manager for more than 40 years of Workman Clark, Limited, shipbuilders, of Belfast, died recently. After the winding up of Workman Clark, Limited, Mr. Thompson joined Harland & Wolff, Limited, Belfast. He was for a period a representative on the Shipbuilding Employers' Federation.

MR. HARRY N. HARRISON, a member of the General Council of the T.U.C. and a national officer of the National Union of General and Municipal Workers, died on December 28. His work on behalf of the N.U.G.M.W. was particularly concerned with the metal industries. He served several terms as president of the Confederation of Shipbuilding and Engineering Unions. Mr. Harrison was 53 years of age.

MR. ALEXANDER LINDSAY, who has died at the age of 54, was a special director of William Beardmore & Company, Limited, steel manufacturers, of Glasgow. He had been with the company for over 30 years. Mr. Lindsay was especially well-known in shipbuilding circles, and had been chairman of the English and Scottish Steel Founders' Association, and a founder member of the British Works Management Association.

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Imports and Exports of Iron and Steel

Board of Trade Returns for November

The following tables, based on Board of Trade returns, give figures of imports and exports of iron and steel in November and the first 11 months of 1947. Figures for the corresponding period of 1938 are given for purposes of comparison.

Total Exports of Iron and Steel

Destination.	November, 1947.	Eleven months ended November.	Eleven-twelfths of 1938.
	Tons.	Tons.	Tons.
Eire	4,895	57,403	51,076
Channel Islands	575	6,254	6,798
Malta and Gozo	232	2,802	2,112
Cyprus	155	2,719	1,518
Palestine	3,204	36,068	7,398
British West Africa	3,687	43,848	45,598
Union of South Africa	8,490	144,382	211,830
Northern Rhodesia	261	7,419	18,860
Southern Rhodesia	2,083	19,509	33,195
British East Africa	6,262	42,009	23,771
British India	5,223	94,798	145,454
Burma	4,193	45,195	16,970
British Malaya	3,549	38,300	61,036
Ceylon	766	12,224	23,862
Hong Kong	1,424	19,442	21,629
Australia	3,481	36,718	156,662
New Zealand	3,385	41,739	120,893
Canada	1,123	15,582	78,292
British West India Islands	4,979	30,947	40,563
Anglo-Egyptian Sudan	458	9,894	7,599
Other British countries	2,753	41,319	16,465
Soviet Union	—	2,543	3,987
Finland	8,108	52,486	16,140
Sweden	6,038	83,845	10,975
Norway	2,454	46,895	18,584
Iceland	151	7,367	603
Denmark	9,139	96,595	79,984
Poland	35	904	2,280
Netherlands	6,339	88,534	47,262
Belgium	1,455	18,403	18,631
Luxemburg	—	602	94
France	517	18,723	12,271
Switzerland	1,298	15,536	2,552
Portugal	625	13,700	7,070
Spain	251	4,691	7,117
Italy	144	5,859	4,711
Greece	332	15,035	1,606
Turkey	630	12,312	12,611
Dutch East Indies	945	19,196	25,031
Dutch West India Islands	977	10,143	2,258
Belgian Congo	328	1,687	278
Portuguese East Africa	200	4,960	13,035
Syria	10	2,827	2,389
Egypt	2,515	38,717	31,542
Iraq	4,578	60,295	23,595
Iran	3,962	54,409	101,181
China	3,390	57,559	20,635
U.S.A.	125	9,052	2,005
Colombia	526	7,433	3,504
Venezuela	6,456	35,789	4,285
Ecuador	452	4,567	1,460
Peru	551	4,784	2,779
Chile	1,873	9,762	5,769
Brazil	1,134	22,758	15,574
Uruguay	378	10,379	6,955
Argentine	2,484	76,614	72,743
Other foreign countries	2,123	50,606	83,152
Total	131,701	1,714,138	1,756,219

THE FURNESS SHIPBUILDING COMPANY, LIMITED, of Haverton Hill-on-Tees, have contracted to build two motor tankers of 16,300 tons deadweight for Norwegian owners.

Total Imports of Iron and Steel

From	November, 1947.	Eleven months ended November.	Eleven-twelfths of 1938.
	Tons.	Tons.	Tons.
British India	125	4,767	142,664
Australia	2,705	45,740	33
Canada	4,970	127,643	107,594
Other British countries	130	1,635	5,132
Sweden	1,322	11,101	82,313
Norway	597	22,704	30,960
Belgium	8,857	55,849	250,874
Luxemburg	1,778	11,572	53,718
France	75	1,357	235,901
U.S.A.	19,348	188,436	183,967
Other foreign countries	66	13,960	139,100
Total	39,973	484,764	1,232,247
Iron ore and concentrates—			
Manganiferous	—	59,852	57,093
Other sorts	452,241	6,215,068	4,676,714
Iron and steel, scrap and waste, fit only for the recovery of metal	48,539	356,375	579,519

Exports of Iron and Steel by Products

Product.	November, 1947.	Eleven months ended November.	Eleven-twelfths of 1938.
	Tons.	Tons.	Tons.
Pig-iron	430	42,499	86,113
Ferro-alloys, etc.—			
Ferro-tungsten	35	882	473
Spiegeleisen & ferro-manganese	748	9,039	4,763
All other descriptions*	75	710	960
Ingots, blooms, billets and slabs	414	3,658	8,932
Iron bars and rods	494	5,456	2,931
Sheet and tinplate bars	68	112	11,349
Wire rods	43	2,568	2,915
Bright steel bars	1,784	23,918	6,039
Other steel bars and rods	9,746	130,612	93,503
Special steel	1,736	16,220	4,521
Angles, shapes and sections	4,767	85,182	61,303
Castings and forgings	487	5,023	1,483
Girders, beams, joists and pillars	787	23,950	30,682
Hoop and strip	2,975	37,108	34,262
Plates, ⅛ in. thick and over	8,774	123,389	120,048
Black plates	3,443	33,019	13,327
Black sheets	1,759	41,343	58,218
Galvanised sheets	5,145	59,937	134,690
Tinplates	8,368	128,380	292,702
Tinned sheets	597	6,594	1,293
Terneplates	16	495	3,965
Decorated tinplates	272	1,595	4,004
Cast-iron pipes, up to 6-in. dia.	4,461	51,707	44,850
Do., over 6 in. dia.	2,443	34,360	39,383
Wrought-iron tubes	23,938	229,059	201,641
Radiators and central-heating boilers	388	3,732	3,693
Railway material	11,442	146,366	144,975
Wire	2,295	42,966	50,584
Cable and rope	2,067	24,938	15,034
Netting, fencing and mesh	1,948	15,812	8,632
Other wire manufactures	462	6,588	3,366
Nails, tacks, etc.	622	7,104	3,490
Rivets and washers	668	7,779	7,824
Wood screws	596	4,069	2,302
Bolts, nuts and metal screws	1,544	20,089	16,109
Stoves, grates, etc. (excl. gas)	708	5,962	6,421
Sanitary cisterns	109	813	2,577
Fencing material	422	6,238	4,703
Anchors, etc.	610	8,190	5,808
Chains	805	8,176	5,767
Springs	407	5,107	3,603
Hollow-ware	4,181	59,710	9,812
All other manufactures	18,620	243,684	197,179
Total	131,701	1,714,138	1,756,219

* The figures for 1938 are not completely comparable with those for subsequent years.

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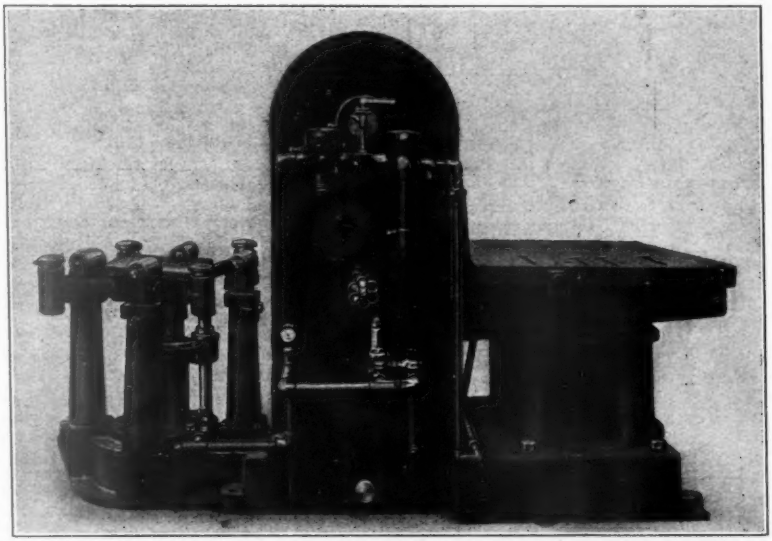

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News in Brief

WILLIAM GRAY & COMPANY, LIMITED, shipbuilders, etc., were fined £10 at West Hartlepool for using an untested machine.

SEVERAL BLOCKSHIPS off the eastern approaches of Scapa Flow are to be removed by the British Iron and Steel Federation as part of the scrap drive.

A SPECIAL MISSION of eight members of the U.S. Government and industry has been appointed by Mr. Harriman, Secretary of Commerce, to search the U.S. zone of Germany for scrap metal.

A SUCCESSFUL RE-UNION DANCE was held at the Palais-de-Dance, Newton Heath, Manchester, when some 400 present and former employees were the guests of Matthew Swain, Limited, irontounders, of Newton Heath.

THE COUNCIL OF the British Welding Research Association have gratefully accepted the offer of the British Oxygen Company, Limited, to provide a prize fund of £100 per annum for three years for a competition relating to welding.

PRODUCTION OF virgin aluminium in the United Kingdom in October amounted to 2,418 long tons, and of secondary to 10,246 tons. Imports of virgin aluminium totalled 13,290 tons and despatches 16,892 tons. Despatches of secondary aluminium amounted to 8,528 tons.

FOUR SHIPS of 15,273 gross tons were launched on the Tyne during November, compared with three vessels of 26,650 tons last year. Output for the 11 months of the year reached 45 vessels of 165,414 gross tons, against 44 vessels of 193,009 tons for the same period of 1946.

PHILIPS ELECTRICAL INDUSTRIES, LIMITED, a private company, has been formed as a holding company with a capital of £2,500,000 to acquire and hold certain shares of the Philips group of companies in Great Britain. It is purely internal reorganisation, and regrouping, and has no external implications.

AN ESTIMATED EXPENDITURE of £256,000 for making good deficiencies and replacing worn-out machinery and equipment in the London County Council polytechnics and technical institutes is recommended in the report of a sub-committee which was considered by the L.C.C. education committee recently. Since October, 1945, £42,000 has been spent on the purchase and installation in aided and maintained technical institutes of machinery and equipment from redundant Government stocks.

IT IS ESTIMATED that staggering of hours and other schemes to relieve the load on electricity generating stations have reduced the peak load by about a quarter. Giving this information at a Press conference, Mr. R. M. Gould, chief industrial commissioner of the Ministry of Labour, said that industry had done all it could be expected to do, and it would be wrong to ask it to make any further contribution. It was a remarkable achievement, in which the use of compulsory powers had not once been necessary.

Suspected Case of Silicosis

Inquest on Aluminium Foundry Worker

The absence of a factory inspector from an inquest which raised points of importance to the foundry industry, and which, it was suggested, might ultimately result in aluminium founding being included as a dangerous trade from the point of view of industrial diseases, on December 24, caused the West Bromwich Coroner (Mr. Lyon Clark) to remark: "I don't know why a factory inspector is not here. It is a very important matter which must concern that department as representatives of the public."

The inquest was on Charles Taylor (39), a moulder employed by the Northern Aluminium Company, Limited, for the past 15 years. Admitted to hospital on the previous Saturday with severe abdominal pains, he died the same night, and Dr. J. Ford, the hospital pathologist, said the cause of death was general peritonitis and silico-tuberculosis.

In reply to the Coroner, the doctor said, although he was perfectly satisfied of the existence of silicosis, he had sent the lungs of the man to the Silicosis Board at Stoke-on-Trent. When asked if this meant that silica was present in aluminium, the doctor said he was not in a position to express an opinion as to how the man contracted the disease.

Mr. W. T. Bennett, local secretary of the Amalgamated Union of Factory Workers, told the jury that Taylor had not worked since April, 1945, and his case was to be fought in the Birmingham Courts. A Wednesbury doctor certified him as suffering from silicosis following an X-ray examination.

Mr. W. G. Leigh, for the Northern Aluminium Company, said a medical board had refused a silicosis certificate, and the case was being held up pending a House of Lords decision in another case. He said the question being raised in the House was whether the aluminium founding industry should come within the scheme affecting industrial diseases.

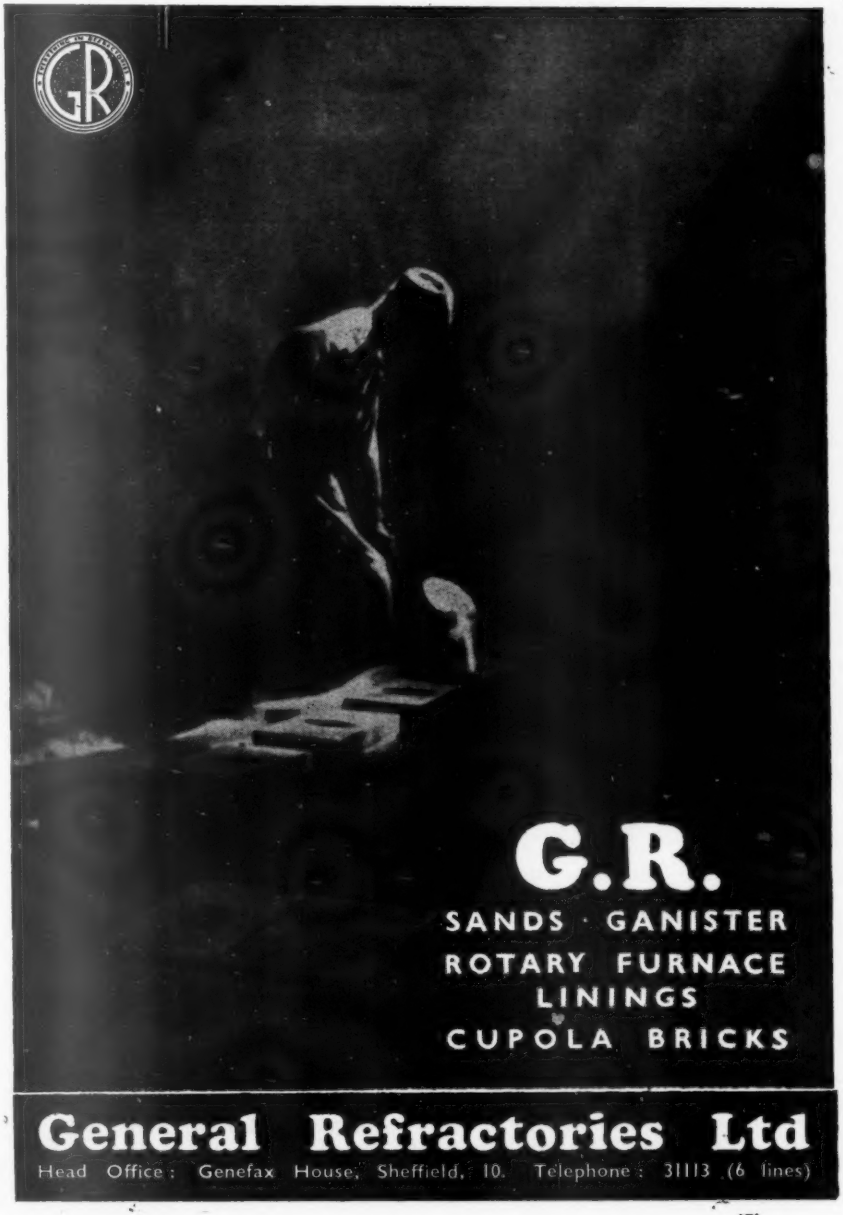
Mr. G. Heron, for Taylor's widow: "It is the old, old story that specialists by external examination of the living man are unable to say definitely that silicosis is present, and we have to wait until the man dies for a post-mortem to make certain."

The Coroner told the jury that the matter was one of extreme public importance, for it seemed that the man died as a result of his occupation. While aluminium itself may not have been the cause, there may have been something else in the work to account for it.

The jury returned a verdict in accordance with the medical evidence.

MR. ROBERT PATRICK SLOAN, a member of the Central Electricity Board since 1936, died recently. He was 73.

MR. JAMES ALEXANDER ANDERSON, former managing director of the Sugar Machinery Manufacturing Company, Limited, London, has died after a short illness. He was 64.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171

Raw Material Markets

Iron and Steel

Production of native ironstone, which has recently been on a disappointing scale, has at last taken an upward trend. Furnacemen have also been given assurances of better supplies of coke and, when these are to hand, the starting of additional blast furnaces will become practical politics. Of the need for a bigger output of pig-iron there is abundant evidence; stocks are reduced to very slender proportions, and the position will only be slightly eased by the holiday stoppages at the foundries. Production of hematite has recently been increased, but high-phosphorus iron is not being provided in adequate tonnages and the difficulties caused thereby in the light foundries are accentuated by the prevailing scarcity of cast-iron scrap.

Very considerable tonnages of steel semis in the form of billets, blooms, sheet bars, slabs, etc., are being provided by Brtish steelmakers and, if the re-rollers are not getting all the material they require, it is due to their swollen requirements, coupled with the fact that imports have dwindled to very small proportions. To make up the deficiency, electrically-melted steel is being used for the execution of a few export orders, and defective billets and sheet bars also command a prompt sale.

The plate and section mills are turning out unprecedented tonnages of material and there will be a further rush to effect maximum deliveries before the end of the period. Some of the plate mills are said to have nine months' work still on their books, but it is expected that there will be heavy cancellations when the new authorisation system is put into operation. In any event, shipbuilders are confidently expecting more generous treatment in the matter of steel supplies. The overall demand for all descriptions of rolled steel, however, is far in excess of the supply and equitable distribution is going to be one of the major problems in the coming year.

Non-ferrous Metals

The negotiations for a new tin contract between the American Reconstruction Finance Corporation and the Bolivian producers are expected to be brought to a conclusion within a week or so, but they may, of course, drag on longer than this. Why the Ministry of Supply elected to raise its price when it did is somewhat in doubt, except, of course, that the producers in the Far East were dissatisfied and were pressing for a free market. The United States price of tin was raised very quickly after the British increase, from 80 cents to 94 cents per lb., the other grades being adjusted accordingly. Although the British Government is again selling without restriction to consumers in this country, it would not be true to say that all uncertainty has been removed from the tin situation, for the Bolivian contract has still to be settled. It is reported that the price paid may easily be a dollar a pound or even more, and in that event a further advance will be seen in the American selling price. But what is more important from this country's point of view is the fact that our buying price to Bolivia will go up and, presumably, the Ministry's buying price to the Nigerian and Colonial producers.

Statistics issued by the British Non-ferrous Metals Federation give the November usage of virgin copper as 32,079 tons and of copper and alloy scrap (copper content) as 14,901 tons. Both of these are lower than October, which was a remarkably good month, the virgin by about 4,000 tons and the scrap by some 2,000 tons or so. Nevertheless, the average rate of usage during the last quarter was very high, and even allowing for the Christmas holiday break, December is likely to be a good month and 1947 a bumper year. What 1948 holds in store has yet to be seen, but the non-ferrous trade will do well to maintain the 1947 rate. There are, of course, doubts about whether sufficient metal will be forthcoming to permit of such a high rate of consumption but, in regard to this, information is scanty. However, the outlook for scrap is poor and the absence of Government scrap in full and free supply is going to be felt. At the prices ruling to-day, secondary metal ought to be very plentiful, but this is not the case by any means.

New Companies

("Limited" is understood. Figures indicate capital. Names are of directors unless otherwise stated. Information compiled by Jordan & Sons, 116, Chancery Lane, London, W.C.2.)

B. B. Light Castings, Stone Mill, Bamber Bridge, near Preston—£3,000.

Slough Foundries, Swinley Buildings, Bath Road, Cippenham, Slough—£1,000.

Atlas Steels, 38, Parliament Street, London, S.W.1—Registered in Canada in 1925.

Dickerson Plant & Engineering Company, 5, Thavies Inn, London, E.C.1. £25,050.

Felt Machinery, 124, Padiham Road, Burnley—Engineers, founders, etc. £20,000.

Overseas Metal Trading—£5,000. V. C. Ullmer, 73, Basinghall Street, London, E.C.2, subscriber.

Joseph Hughes, Atherton's Quay, Warrington—Engineers. £5,000. N. J. and D. Pemberton.

M. B. Engineering Works, 92, Elm Road, Kingston-on-Thames. £10,000. T. D. and W. G. McWilliam.

Rayall Engineering Company, 47, Temple Row, Birmingham—£5,000. R. Botteley and A. D. Gibbins.

Crescent Iron Foundry, Willow Dene, Newtown, Pontefract—£3,000. N. P. Wilson, W. Maundrill, and C. Power.

Keim Metal & Stamping Works, Hanworth Air Park (Centre), Feltham, Mdx—£5,000. E. Cove and H. Heidecker.